16. (once amended) A gas turbine engine in accordance with Claim 14 wherein said water delivery sub-system further configured to supply at least one of water and steam to at least one dome of said combustor.

Remarks

The Office Action mailed January 23, 2001 has been carefully reviewed and the foregoing amendment has been made in consequence thereof. Submitted herewith is a Submission of Marked Up Paragraphs and Claims.

Claims 1-6 and 8-20 are pending in this application. Claims 1-20 stand rejected. Claim 7 has been cancelled.

Applicants note the objections to the drawings. Submitted herewith is a request for approval of drawing change. Specifically, Figure 2 has been amended to include a reference numeral "130" indicating a water delivery system. Applicants respectfully request approval of the drawing changes. Upon approval of the drawing changes, Applicants will submit substitute drawings incorporating the above-noted change. For the reasons set forth above, Applicants request that the objections to the drawings be withdrawn.

The rejection of Claims 1, 5, 6, 12-15, 18, and 19 under 35 U.S.C. § 102 as being anticipated by Schlep is respectfully traversed.

Schlep describes a gas turbine engine including a compressor 12, a single-dome combustor means 24, and a turbine 14 mounted to a shaft 10. Cooling water is supplied through shaft 10 into a cavity 36 defined within turbine 14. Fuel is supplied to combustor means 24 through a conduit 26 into a premix chamber 30 where it is mixed with steam supplied from a superheater.

Claim 1 recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to

the gas turbine engine, and the method comprising the step of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...."

Schlep does not describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the step of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one. Rather, Schlep describes operating a gas turbine engine that only includes a single dome combustor. For the reasons set forth above, Claim 1 is submitted to be patentable over Schlep.

Claim 5 depends from independent Claim 1. When the recitations of Claim 5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 5 likewise is patentable over Schlep.

Claim 6 recites a combustor system for a gas turbine engine, wherein the combustor system comprises "a combustor comprising a plurality of domes, at least one of said combustor domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Schlep does not describe nor suggest a combustor system for a gas turbine engine, wherein the combustor system includes a plurality of domes, wherein at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Schlep describes operating a gas turbine engine that only includes a single dome combustor. For the reasons set forth above, Claim 6 is submitted to be patentable over Schlep.

Claims 12 and 13 depend from independent Claim 6. When the recitations of Claims 12 and 13 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claims 12 and 13 likewise are patentable over Schlep.

Claim 14 recites a gas turbine engine comprising a combustor system comprising a combustor and a water delivery sub-system...said combustor being a lean premix combustor comprising a plurality of domes...at least one of said domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Schlep does not describe a gas turbine engine including a combustor system including a combustor that includes a combustor and a water delivery sub-system, wherein the combustor includes a plurality of domes such that at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Schlep describes operating a gas turbine engine that includes only a single dome combustor. For the reasons set forth above, Claim 14 is submitted to be patentable over Schlep.

Claims 15, 18, and 19 depend from independent Claim 14. When the recitations of Claims 15, 18, and 19 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15, 18, and 19 likewise are patentable over Schlep.

Furthermore, to the extent understood, Schlep does not specifically disclose a water delivery system operable in a first and second mode relative to a predetermined value. Applicants respectfully disagree, however, that such operation modes are inherent in Schlep. While it may be inherent that the operation of a water delivery system may be dependent upon an engine load, Applicants submit that there is no teaching or suggestion inherent within Schlep that the water delivery system operates in a first mode and a second mode as recited in Claims 5, 12, 13, and 18-20. Claims 5, 12, 13, and 18-20 recite that the water delivery system supplies water at a first flow rate until the engine reaches a predefined percentage of rated engine power, at which time water is supplied at a second flow rate. This appears to be in contrast with Schlep, which suggests that water is supplied based on the engine load.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1, 5, 6, 12-15, 18, and 19 be withdrawn.

The rejection of Claims 1, 5, 6, 12-15, 18, and 19 under 35 U.S.C. § 102 as being anticipated by Johnson is respectfully traversed.

Johnson describes a gas turbine engine 12 including a compressor 22 and an axially-connected combustor 28 including a single dome. In one embodiment, shown in Figure 2, Johnson describes at Column 3, lines 6-7, that a lean combustible mixture of ammonia and air is delivered to compressor 22. In an alternative embodiment, shown in Figure 3, Johnson describes an operation of a gas turbine engine including a water-alcohol mixture.

Claim 1 recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the steps of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...supplying at least one of water and steam into the gas turbine engine with the water delivery system...."

Johnson does not describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the steps of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one, and supplying at least one of water and steam into the gas turbine engine with the water delivery system. Rather, Johnson describes operating a gas turbine engine including only a single dome combustor, and does not describe a gas turbine engine including a water delivery system and a combustor that is operable with a fuel/air mixture equivalence ration less than one. For the reasons set forth above, Claim 1 is submitted to be patentable over Johnson.

Claim 5 depends from independent Claim 1. When the recitations of Claim 5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 5 likewise is patentable over Johnson.

Claim 6 recites a combustor system for a gas turbine engine, wherein the combustor system comprises "a combustor comprising a plurality of domes, at least one of said combustor domes configured to operate with a fuel/air mixture equivalence ratio less than one...a water delivery sub-system connected to the gas turbine engine...." Johnson does not describe nor suggest a combustor system for a gas turbine engine, wherein the combustor system includes a combustor including a plurality of domes, such that at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one, in combination with a water delivery sub-system connected to the gas turbine engine. Rather, Johnson describes operating a gas turbine engine including a single dome combustor, and does not describe a gas turbine engine connected to a water delivery system and including a combustor operable with a fuel/air mixture equivalence ration less than one. For the reasons set forth above, Claim 6 is submitted to be patentable over Johnson.

Claims 12 and 13 depend from independent Claim 6. When the recitations of Claims 12 and 13 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claims 12 and 13 likewise are patentable over Johnson.

Claim 14 recites a gas turbine engine comprising a combustor system comprising a combustor and a water delivery sub-system...said combustor being a lean premix combustor comprising a plurality of domes...at least one of said domes configured to operate with a fuel/air mixture equivalence ratio less than one... said water delivery sub-system configured to supply at least one of water and steam to the gas turbine engine such that at least one of water and steam is injected into the combustor." Johnson does not describe a gas turbine engine including a combustor system including a combustor that includes a combustor and a water delivery sub-system, wherein the combustor includes a plurality of domes such that at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one, in combination with the water delivery sub-system configured to supply at least one of water and steam to the gas turbine engine such that at least one of water and steam is injected into the combustor. Rather, Johnson describes operating a gas turbine engine including a single dome combustor, and

does not describe a gas turbine engine connected to a water delivery system and including a combustor operable with a fuel/air mixture equivalence ration less than one. For the reasons set forth above, Claim 14 is submitted to be patentable over Johnson.

Claims 15, 18, and 19 depend from independent Claim 14. When the recitations of Claims 15, 18, and 19 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15, 18, and 19 likewise are patentable over Johnson.

Furthermore, to the extent understood, Johnson does not specifically disclose a water delivery system operable in a first and second mode relative to a predetermined value. Applicants respectfully disagree, however, that such operation modes are inherent in Johnson. While it may be inherent that the operation of a water delivery system may be dependent upon an engine load, Applicants submit that there is no teaching or suggestion inherent within Johnson that the water delivery system operates in a first mode and a second mode as recited in Claims 5, 12, 13, and 18-20. Claims 5, 12, 13, and 18-20 recite that the water delivery system supplies water at a first flow rate until the engine reaches a predefined percentage of rated engine power, at which time water is supplied at a second flow rate. This appears to be in contrast with Johnson, which suggests that water is supplied based on the engine load.

In addition, it is asserted in the Office Action that the combustor described in Johnson would be inherently operable fuel lean, i.e., so that complete combustion of the fuel occurs. Applicants respectfully disagree. While it may be inherent that a combustor operate so that complete combustion of the fuel occurs, Applicants submit that such conditions occur when a combustor is operating under stoichiometric operating conditions, wherein the mixture of fuel and air is near a specific ratio such that all fuel and air react (i.e. no unburned fuel or excess air is present in the products), as described in Aguet at Column 3, lines 24-30. Applicants submit that it is not inherent to operate a combustor fuel lean, wherein the amount of air introduced to the combustor exceeds a stoichiometric amount needed to ensure complete combustion of the fuel.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1, 5, 6, 12-15, 18, and 19 be withdrawn.

The rejection of Claims 1, 5, 6, 12-15, 18, and 19 under 35 U.S.C. § 102 as being anticipated by Moss is respectfully traversed.

Moss describes a combustion chamber for a gas turbine. The chamber includes a single dome, a fuel-conveying pipe 7, a compressed-air pipe 8, and a water-conveying pipe 9. The water supplied to the chamber is used to cool a fire-brick lining that surrounds the combustion chamber.

Claim 1 recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the step of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...."

Moss does not describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the step of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one. Rather, Moss describes the operation of a single dome combustion chamber. For the reasons set forth above, Claim 1 is submitted to be patentable over Moss.

Claim 5 depends from independent Claim 1. When the recitations of Claim 5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 5 likewise is patentable over Moss.

Claim 6 recites a combustor system for a gas turbine engine, wherein the combustor system comprises "a combustor comprising a plurality of domes, at least one of said combustor

domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Moss does not describe nor suggest a combustor system for a gas turbine engine, wherein the combustor system includes a plurality of domes, wherein at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Moss describes the operation of a single domed combustion chamber. For the reasons set forth above, Claim 6 is submitted to be patentable over Moss.

Claims 12 and 13 depend from independent Claim 6. When the recitations of Claims 12 and 13 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claims 12 and 13 likewise are patentable over Moss.

Claim 14 recites a gas turbine engine comprising a combustor system comprising a combustor and a water delivery sub-system...said combustor being a lean premix combustor comprising a plurality of domes...at least one of said domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Moss does not describe a gas turbine engine including a combustor system including a combustor that includes a combustor and a water delivery sub-system, wherein the combustor includes a plurality of domes such that at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Moss describes the operation of a single domed combustion chamber. For the reasons set forth above, Claim 14 is submitted to be patentable over Moss.

Claims 15, 18, and 19 depend from independent Claim 14. When the recitations of Claims 15, 18, and 19 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15, 18, and 19 likewise are patentable over Moss.

Furthermore, to the extent understood, Moss does not specifically disclose a water delivery system operable in a first and second mode relative to a predetermined value. Applicants respectfully disagree, however, that such operation modes are inherent in Moss. While it may be inherent that the operation of a water delivery system may be dependent upon an engine load, Applicants submit that there is no teaching or suggestion inherent within Moss that

the water delivery system operates in a first mode and a second mode as recited in Claims 5, 12, 13, and 18-20. Claims 5, 12, 13, and 18-20 recite that the water delivery system supplies water at a first flow rate until the engine reaches a predefined percentage of rated engine power, at which time water is supplied at a second flow rate. This appears to be in contrast with Moss, which suggests that water is supplied based on the engine load.

In addition, it is asserted in the Office Action that the combustor described in Moss would be inherently operable fuel lean, i.e., so that complete combustion of the fuel occurs. Applicants respectfully disagree. While it may be inherent that a combustor operate so that complete combustion of the fuel occurs, Applicants submit that such conditions occur when a combustor is operating under stoichiometric operating conditions, wherein the mixture of fuel and air is near a specific ratio such that all fuel and air react (i.e. no unburned fuel or excess air is present in the products), as described in Aguet at Column 3, lines 24-30. Applicants submit that it is not inherent to operate a combustor fuel lean, wherein the amount of air introduced to the combustor exceeds a stoichiometric amount needed to ensure complete combustion of the fuel.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1, 5, 6, 12-15, 18, and 19 be withdrawn.

The rejection of Claims 1, 5, 6, 12-15, 18, and 19 under 35 U.S.C. § 102 as being anticipated by Horner et al. is respectfully traversed.

Horner et al. describe a continuous-burning combustor 10 for use with a gas turbine engine. Combustor 10 includes a single dome assembly 22 including a swirl cup 28, a dome plate 32, and a swirler 38. Swirler 38 receives a fuel nozzle 26 therethrough that supplies fuel and water to a combustion chamber 14 defined within combustor 10.

Claim 1 recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the step of "operating the gas turbine engine

with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...."

Horner et al. do not describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the step of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one. Rather, Horner et al. describe a combustor including only a single dome, and do not describe operating a combustor operable with a fuel/air mixture equivalence ratio less than one. For the reasons set forth above, Claim 1 is submitted to be patentable over Horner et al.

Claim 5 depends from independent Claim 1. When the recitations of Claim 5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 5 likewise is patentable over Horner et al.

Claim 6 recites a combustor system for a gas turbine engine, wherein the combustor system comprises "a combustor comprising a plurality of domes, at least one of said combustor domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Horner et al. do not describe nor suggest a combustor system for a gas turbine engine, wherein the combustor system includes a plurality of domes, wherein at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Horner et al. describe a combustor including only a single dome, and do not describe operating a combustor operable with a fuel/air mixture equivalence ratio less than one. For the reasons set forth above, Claim 6 is submitted to be patentable over Horner et al.

Claims 12 and 13 depend from independent Claim 6. When the recitations of Claims 12 and 13 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claims 12 and 13 likewise are patentable over Horner et al.

Claim 14 recites a gas turbine engine comprising a combustor system comprising a combustor and a water delivery sub-system...said combustor being a lean premix combustor comprising a plurality of domes...at least one of said domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Horner et al. do not describe a gas turbine engine including a combustor system including a combustor that includes a combustor and a water delivery sub-system, wherein the combustor includes a plurality of domes such that at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Horner et al. describe a combustor including only a single dome, and do not describe operating a combustor operable with a fuel/air mixture equivalence ratio less than one. For the reasons set forth above, Claim 14 is submitted to be patentable over Horner et al.

Claims 15, 18, and 19 depend from independent Claim 14. When the recitations of Claims 15, 18, and 19 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15, 18, and 19 likewise are patentable over Horner et al.

Furthermore, to the extent understood, Horner et al. do not specifically disclose a water delivery system operable in a first and second mode relative to a predetermined value. Applicants respectfully disagree, however, that such operation modes are inherent in Horner et al. While it may be inherent that the operation of a water delivery system may be dependent upon an engine load, Applicants submit that there is no teaching or suggestion inherent within Moss that the water delivery system operates in a first mode and a second mode as recited in Claims 5, 12, 13, and 18-20. Claims 5, 12, 13, and 18-20 recite that the water delivery system supplies water at a first flow rate until the engine reaches a predefined percentage of rated engine power, at which time water is supplied at a second flow rate. This appears to be in contrast with Horner et al., which suggests that water is supplied based on the engine load.

In addition, it is asserted in the Office Action that the combustor described in Horner et al. would be inherently operable fuel lean, i.e., so that complete combustion of the fuel occurs. Applicants respectfully disagree. While it may be inherent that a combustor operate so that

complete combustion of the fuel occurs, Applicants submit that such conditions occur when a combustor is operating under stoichiometric operating conditions, wherein the mixture of fuel and air is near a specific ratio such that all fuel and air react (i.e. no unburned fuel or excess air is present in the products), as described in Aguet at Column 3, lines 24-30. Applicants submit that it is not inherent to operate a combustor fuel lean, wherein the amount of air introduced to the combustor exceeds a stoichiometric amount needed to ensure complete combustion of the fuel.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1, 5, 6, 12-15, 18, and 19 be withdrawn.

The rejection of Claims 1-19 under 35 U.S.C. § 102 as being anticipated by Borkowicz et al. is respectfully traversed.

Borkowicz et al. describe a gas turbine 10 including a plurality of combustors 14 that extend circumferentially within gas turbine 10. Each combustor 14 includes a single dome, a combustion chamber 70, and a plurality of fuel nozzles 32 arranged about a longitudinal axis of combustor 14. Each combustor fuel chamber 70 is downstream and in flow communication with the dome. Each fuel nozzle 32 includes a premix passage 60 and a diffusion passage 74.

Claim 1 recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the step of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...."

Borkowicz et al. do not describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the step of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one. Rather, Borkowicz et al. describe a

plurality of combustors, wherein each combustor includes only a single dome, and does not describe operating a combustor operable with a fuel/air mixture equivalence ratio less than one. For the reasons set forth above, Claim 1 is submitted to be patentable over Borkowicz et al.

Claims 2-5 depend from independent Claim 1. When the recitations of Claims 2-5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-5 likewise are patentable over Borkowicz et al.

Claim 6 recites a combustor system for a gas turbine engine, wherein the combustor system comprises "a combustor comprising a plurality of domes, at least one of said combustor domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Borkowicz et al. do not describe nor suggest a combustor system for a gas turbine engine, wherein the combustor system includes a plurality of domes, wherein at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Borkowicz et al. describe a plurality of combustors, wherein each combustor includes only a single dome, and does not describe operating a combustor operable with a fuel/air mixture equivalence ratio less than one. For the reasons set forth above, Claim 6 is submitted to be patentable over Borkowicz et al.

Claim 7 has been cancelled. Claims 8-13 depend from independent Claim 6. When the recitations of Claims 8-13 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claims 8-13 likewise are patentable over Borkowicz et al.

Claim 14 recites a gas turbine engine comprising a combustor system comprising a combustor and a water delivery sub-system...said combustor being a lean premix combustor comprising a plurality of domes...at least one of said domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Borkowicz et al. do not describe a gas turbine engine including a combustor system including a combustor that includes a combustor and a water delivery sub-system, wherein the combustor includes a plurality of domes such that at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one.

Rather, Borkowicz et al. describe a plurality of combustors, wherein each combustor includes only a single dome, and does not describe operating a combustor operable with a fuel/air mixture equivalence ratio less than one. For the reasons set forth above, Claim 14 is submitted to be patentable over Borkowicz et al.

Claims 15-19 depend from independent Claim 14. When the recitations of Claims 15-19 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15-19 likewise are patentable over Borkowicz et al.

Furthermore, to the extent understood, Borkowicz et al. do not specifically disclose a water delivery system operable in a first and second mode relative to a predetermined value. Applicants respectfully disagree, however, that such operation modes are inherent in Borkowicz et al. While it may be inherent that the operation of a water delivery system may be dependent upon an engine load, Applicants submit that there is no teaching or suggestion inherent within Moss that the water delivery system operates in a first mode and a second mode as recited in Claims 5, 12, 13, and 18-20. Claims 5, 12, 13, and 18-20 recite that the water delivery system supplies water at a first flow rate until the engine reaches a predefined percentage of rated engine power, at which time water is supplied at a second flow rate. This appears to be in contrast with Borkowicz et al., which suggests that water is supplied based on the engine load.

In addition, it is asserted in the Office Action that the combustor described in Borkowicz et al. would be inherently operable fuel lean, i.e., so that complete combustion of the fuel occurs. Applicants respectfully disagree. While it may be inherent that a combustor operate so that complete combustion of the fuel occurs, Applicants submit that such conditions occur when a combustor is operating under stoichiometric operating conditions, wherein the mixture of fuel and air is near a specific ratio such that all fuel and air react (i.e. no unburned fuel or excess air is present in the products), as described in Aguet at Column 3, lines 24-30. Applicants submit that it is not inherent to operate a combustor fuel lean, wherein the amount of air introduced to the combustor exceeds a stoichiometric amount needed to ensure complete combustion of the fuel.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1-19 be withdrawn.

The rejection of Claims 1-3, 5-8, 11-14, and 16-19 under 35 U.S.C. § 102 as being anticipated by Hilburn et al. is respectfully traversed.

Hilburn et al. describe a combustion system 10 operable with lean premix and including a diffusion flow pilot assembly 12 and a steam delivery assembly 24 arranged to supply steam to a pilot nozzle 20. Diffusion flow pilot assembly 12 includes a nozzle block 14 having a plurality of main premix nozzles 40 extending downstream from a downstream surface 38 of nozzle block 14. Fuel exiting nozzles 40 is directed combustion air flowing into a single dome combustor 13.

Claim 1 recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the step of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...."

Hilburn et al. do not describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the step of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one. Rather, Hilburn et al. describe a diffusion flow pilot assembly that includes a plurality of nozzles that direct fuel into a single dome combustor. For the reasons set forth above, Claim 1 is submitted to be patentable over Hilburn et al.

Claims 2, 3, and 5 depend from independent Claim 1. When the recitations of Claims 2, 3, and 5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2, 3, and 5 likewise are patentable over Hilburn et al.

Claim 6 recites a combustor system for a gas turbine engine, wherein the combustor system comprises "a combustor comprising a plurality of domes, at least one of said combustor domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Hilburn et al. do not describe nor suggest a combustor system for a gas turbine engine, wherein the combustor system includes a plurality of domes, wherein at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Hilburn et al. describe a diffusion flow pilot assembly that includes a plurality of nozzles that direct fuel into a single dome combustor. For the reasons set forth above, Claim 6 is submitted to be patentable over Hilburn et al.

Claim 7 has been cancelled. Claims 8, and 11-13 depend from independent Claim 6. When the recitations of Claims 8 and 11-13 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claims 8 and 11-13 likewise are patentable over Hilburn et al.

Claim 14 recites a gas turbine engine comprising a combustor system comprising a combustor and a water delivery sub-system...said combustor being a lean premix combustor comprising a plurality of domes...at least one of said domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Hilburn et al. do not describe a gas turbine engine including a combustor system including a combustor that includes a combustor and a water delivery sub-system, wherein the combustor includes a plurality of domes such that at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Hilburn et al. describe a diffusion flow pilot assembly that includes a plurality of nozzles that direct fuel into a single dome combustor. For the reasons set forth above, Claim 14 is submitted to be patentable over Hilburn et al.

Claims 15-19 depend from independent Claim 14. When the recitations of Claims 15-19 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15-19 likewise are patentable over Hilburn et al.

Furthermore, to the extent understood, Hilburn et al. do not specifically disclose a water delivery system operable in a first and second mode relative to a predetermined value. Applicants respectfully disagree, however, that such operation modes are inherent in Hilburn et al. While it may be inherent that the operation of a water delivery system may be dependent upon an engine load, Applicants submit that there is no teaching or suggestion inherent within Hilburn et al. that the water delivery system operates in a first mode and a second mode as recited in Claims 5, 12, 13, and 18-20. Claims 5, 12, 13, and 18-20 recite that the water delivery system supplies water at a first flow rate until the engine reaches a predefined percentage of rated engine power, at which time water is supplied at a second flow rate. This appears to be in contrast with Hilburn et al., which suggests that water is supplied based on the engine load.

In addition, it is asserted in the Office Action that the combustor described in Hilburn et al. would be inherently operable fuel lean, i.e., so that complete combustion of the fuel occurs. Applicants respectfully disagree. While it may be inherent that a combustor operate so that complete combustion of the fuel occurs, Applicants submit that such conditions occur when a combustor is operating under stoichiometric operating conditions, wherein the mixture of fuel and air is near a specific ratio such that all fuel and air react (i.e. no unburned fuel or excess air is present in the products), as described in Aguet at Column 3, lines 24-30. Applicants submit that it is not inherent to operate a combustor fuel lean, wherein the amount of air introduced to the combustor exceeds a stoichiometric amount needed to ensure complete combustion of the fuel.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1-3, 5-8, 11-14, and 16-19 be withdrawn.

The rejection of Claims 1 and 4 under 35 U.S.C. § 102 as being anticipated by Hughes et al. is respectfully traversed.

Hughes et al. describe a dual fuel injector 10 for use with a gas turbine engine combustor. Fuel injector 10 includes a liquid fuel duct means 24, a water supply duct means 26, and a

gaseous fuel duct means 28. Fuel injector 10 is shown in Figure 1 coupled to a single dome combustor.

Claim 1 recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the step of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...."

Hughes et al. do not describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the step of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one. Rather, Hughes et al. describe a dual fuel injector. For the reasons set forth above, Claim 1 is submitted to be patentable over Hughes et al.

Claim 4 depends from independent Claim 1. When the recitations of Claim 4 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 4 likewise is patentable over Hughes et al.

In addition, it is asserted in the Office Action that the combustor described in Hughes et al. would be inherently operable fuel lean, i.e., so that complete combustion of the fuel occurs. Applicants respectfully disagree. While it may be inherent that a combustor operate so that complete combustion of the fuel occurs, Applicants submit that such conditions occur when a combustor is operating under stoichiometric operating conditions, wherein the mixture of fuel and air is near a specific ratio such that all fuel and air react (i.e. no unburned fuel or excess air is present in the products), as described in Aguet at Column 3, lines 24-30. Applicants submit that it is not inherent to operate a combustor fuel lean, wherein the amount of air introduced to the combustor exceeds a stoichiometric amount needed to ensure complete combustion of the fuel.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1 and 4 be withdrawn.

The rejection of Claims 1, 4-6, 12-15, 18, and 19 under 35 U.S.C. § 102 as being anticipated by Maghon et al. is respectfully traversed.

Maghon et al. describe a combustion chamber BK downstream from a single dome assembly and including a flame tube 2 held therein with an annular gap. Combustion chamber BK also includes a plurality of water nozzles 7, steam nozzles 8, and fuel nozzles 3.1 and 3.2. At Column 6, lines 4-7, Maghon describes that chamber BK operates at stoichiometric conditions to assure "the lowest possible NO_x content".

Claim 1 recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the step of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...."

Maghon et al. do not describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the step of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one. Rather, Maghon et al. describe a combustion chamber that is downstream from a single dome and is configured to operate at stoichiometric conditions. For the reasons set forth above, Claim 1 is submitted to be patentable over Maghon et al.

Claims 4 and 5 depend from independent Claim 1. When the recitations of Claims 4 and 5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 4and 5 likewise are patentable over Maghon et al.

Claim 6 recites a combustor system for a gas turbine engine, wherein the combustor system comprises "a combustor comprising a plurality of domes, at least one of said combustor domes configured to operate with a fuel/air mixture equivalence ratio less than one...." Maghon et al. do not describe nor suggest a combustor system for a gas turbine engine, wherein the combustor system includes a plurality of domes, wherein at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Maghon et al. describe a combustion chamber that is downstream from a single dome and is configured to operate at stoichiometric conditions. For the reasons set forth above, Claim 6 is submitted to be patentable over Maghon et al.

Claims 12 and 13 depend from independent Claim 6. When the recitations of Claims 12 and 13 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claims 12 and 13 likewise are patentable over Maghon et al.

Claim 14 recites a gas turbine engine comprising a combustor system comprising a combustor and a water delivery sub-system...said combustor being a lean premix combustor comprising a plurality of domes...at least one of said domes configured to operate with a fuel/air mixture equivalence ratio less than one...."

Maghon et al. do not describe a gas turbine engine including a combustor system including a combustor that includes a combustor and a water delivery sub-system, wherein the combustor includes a plurality of domes such that at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one. Rather, Maghon et al. describe a combustion chamber that is downstream from a single dome and is configured to operate at stoichiometric conditions. For the reasons set forth above, Claim 14 is submitted to be patentable over Maghon et al.

Claims 15, 18, and 19 depend from independent Claim 14. When the recitations of Claims 15, 18 and 19 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15, 18, and 19 likewise are patentable over Maghon et al.

Furthermore, to the extent understood, Maghon et al. do not specifically disclose a water delivery system operable in a first and second mode relative to a predetermined value. Applicants respectfully disagree, however, that such operation modes are inherent in Maghon et al. While it may be inherent that the operation of a water delivery system may be dependent upon an engine load, Applicants submit that there is no teaching or suggestion inherent within Maghon et al. that the water delivery system operates in a first mode and a second mode as recited in Claims 5, 12, 13, and 18-20. Claims 5, 12, 13, and 18-20 recite that the water delivery system supplies water at a first flow rate until the engine reaches a predefined percentage of rated engine power, at which time water is supplied at a second flow rate. This appears to be in contrast with Maghon et al., which suggests that water is supplied based on the engine load.

In addition, it is asserted in the Office Action that the combustor described in Maghon et al. would be inherently operable fuel lean, i.e., so that complete combustion of the fuel occurs. Applicants respectfully disagree. While it may be inherent that a combustor operate so that complete combustion of the fuel occurs, Applicants submit that such conditions occur when a combustor is operating under stoichiometric operating conditions, wherein the mixture of fuel and air is near a specific ratio such that all fuel and air react (i.e. no unburned fuel or excess air is present in the products), as described in Aguet at Column 3, lines 24-30. Applicants submit that it is not inherent to operate a combustor fuel lean, wherein the amount of air introduced to the combustor exceeds a stoichiometric amount needed to ensure complete combustion of the fuel.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1, 4-6, 12-15, 18, and 19 be withdrawn.

The rejection of Claims 1 and 5 under 35 U.S.C. § 102 as being anticipated by Aguet is respectfully traversed.

Aguet describes a method and an apparatus for mixing gas and steam in a gas turbine plant. The plant includes a combustion chamber 1 including a single dome. Steam and

combustion gases are mixed and ignited within chamber 1. At column 3, lines 24-30 Aguet describes that combustion chamber 1 is operable with a negligible excess of air.

Claim 1 recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the step of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...."

Aguet does not describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the step of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one. Rather, Aguet describes a combustion chamber that includes a single dome and is operable with a negligible amount of excess air. For the reasons set forth above, Claim 1 is submitted to be patentable over Aguet.

Claim 5 depends from independent Claim 1. When the recitations of Claim 5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 5 likewise is patentable over Aguet.

The rejection of Claims 1-4, 6-11, and 15-17 under 35 U.S.C. § 103 as being unpatentable over Schilling et al. in view of either Horner et al. or Borkowicz et al. is respectfully traversed.

Horner et al. and Borkowicz et al. are described above. Schilling et al. describe a multiple annular combustion apparatus 25. Apparatus 25 includes a domed end 35 including a plurality of domes 37, 39, and 41. Each dome 37, 39, and 41 includes a plurality of spaced openings for receiving mixers for mixing air and fuel prior to entry into a combustion chamber 29.

Joshi et al. describe a duel fuel mixer 24 for use with a single domed combustor 10. Mixer 24 includes a swirl cup 22 and inner and outer swirlers 26 and 28, respectively. Mixer 24 is in flow communication with gas fuel passages 38 and a liquid fuel manifold 40.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been an obvious to one of ordinary skill in the art to modify Schilling et al. according to the teachings of either Horner et al. or Borkowicz et al. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Horner et al., Borkowicz et al., or Schilling et al. describe nor suggest the claimed combination. Rather, the present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Schilling et al. is cited for its teaching of a combustor including a plurality of domes, its premixer, and both Horner et al. and Borkowicz et al. are cited for their teaching of steam injection into a premixer of a gas turbine combustor. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection of Claims 1-4, 6-11, and 15-17 withdrawn.

Further, and to the extent understood, none of Horner et al., Borkowicz et al., Schilling et al., or Joshi et al, alone or in combination, describe nor suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 1 recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the step of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air

mixture equivalence ratio less than one... ...supplying at least one of water and steam into the gas turbine engine with the water delivery system...."

None of Horner et al., Borkowicz et al., Schilling et al., or Joshi et al, alone or in combination, describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the steps of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one, and ...supplying at least one of water and steam into the gas turbine engine with the water delivery system. Rather, Schilling et al. describe a multiple annular combustion apparatus that does not include a water delivery system, and both Horner et al. and Borkowicz et al. describe combustors that include only a single dome and do not describe a combustor that is operable with a fuel/air mixture equivalence ratio less than one. For the reasons set forth above, Claim 1 is submitted to be patentable over Schilling et al. in view of either Horner et al. or Borkowicz et al.

Claims 2-4 depend from independent Claim 1. When the recitations of Claims 2-4 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-4 likewise are patentable over Schilling et al. in view of either Horner et al. or Borkowicz et al.

Claim 6 recites a combustor system for a gas turbine engine, wherein the combustor system comprises "a combustor comprising a plurality of domes, at least one of said combustor domes configured to operate with a fuel/air mixture equivalence ratio less than one...a water delivery sub-system connected to the gas turbine engine and configured to supply at least one of water and steam to the gas turbine such that at least one of water and steam is injected into the combustor." None of Horner et al., Borkowicz et al., Schilling et al., or Joshi et al, alone or in combination, describe nor suggest a combustor system for a gas turbine engine, wherein the combustor system includes a plurality of domes, wherein at least one of the domes is configured

to operate with a fuel/air mixture equivalence ratio less than one, in combination with a water delivery sub-system connected to the gas turbine engine and configured to supply at least one of water and steam to the gas turbine such that at least one of water and steam is injected into the combustor. Rather, Schilling et al. describe a multiple annular combustion apparatus that does not include a water delivery system, and both Horner et al. and Borkowicz et al. describe combustors that include only a single dome and do not describe a combustor that is operable with a fuel/air mixture equivalence ratio less than one. For the reasons set forth above, Claim 6 is submitted to be patentable over Schilling et al. in view of either Horner et al. or Borkowicz et al.

Claim 7 has been canceled. Claims 8-11 depend from independent Claim 6. When the recitations of Claims 8-11 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claims 8-11 likewise are patentable over Schilling et al. in view of either Horner et al. or Borkowicz et al.

Claim 14 recites a gas turbine engine comprising a combustor system comprising a combustor and a water delivery sub-system...said combustor being a lean premix combustor comprising a plurality of domes...at least one of said domes configured to operate with a fuel/air mixture equivalence ratio less than one... said water delivery sub-system configured to supply at least one of water and steam to the gas turbine engine such that at least one of water and steam is injected into the combustor."

None of Horner et al., Borkowicz et al., Schilling et al., or Joshi et al, alone or in combination, describe nor suggest a gas turbine engine including a combustor system including a combustor that includes a combustor and a water delivery sub-system, wherein the combustor includes a plurality of domes such that at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one, and wherein the water delivery sub-system is configured to supply at least one of water and steam to the gas turbine engine such that at least one of water and steam is injected into the combustor. Rather, Schilling et al. describe a multiple annular combustion apparatus that does not include a water delivery system, and both Horner et

al. and Borkowicz et al. describe combustors that include only a single dome and do not describe a combustor that is operable with a fuel/air mixture equivalence ratio less than one. For the reasons set forth above, Claim 14 is submitted to be patentable over Schilling et al. in view of either Horner et al. or Borkowicz et al.

Claims 15-17 depend from independent Claim 14. When the recitations of Claims 15-17are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15-17 likewise are patentable over Schilling et al. in view of either Horner et al. or Borkowicz et al.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1-4, 6-11, and 15-17 be withdrawn.

The rejection of Claims 5, 12-14, and 18-20 under 35 U.S.C. § 103 as being unpatentable over Borkowicz et al. or Schilling et al. in view of either Horner et al. or Borkowicz et al., and further in view of Talabisco et al. or Maslak is respectfully traversed.

Borkowicz et al., Schilling et al., and Horner et al. are described above. Talabisco et al. describe a method and apparatus for maintaining a constant level of NO_x and minimizing CO emissions from a gas turbine. The turbine includes a compressor 12 and a combustor 14. Fuel, air, and steam is injected into combustor 14 based on a load of the turbine.

Maslak describes water and steam injection in a cogeneration system 10. System 10 includes a gas turbine 11 including a compressor 12 and a combustor 18. Water and steam is injected based on gas turbine power output.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been an obvious to one of ordinary skill in the art to modify Schilling et al. or Borkowicz et al. according to the teachings of either Horner et al. or Borkowicz et al. and further in view of either Talabisco et al. or Maslak. More specifically, as is well established,

obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Borkowicz et al. or Schilling et al. in view of either Horner et al. or Borkowicz et al., and further in view of Talabisco et al. or Maslak describe nor suggest the claimed combination. Rather, the present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Schilling et al. is cited for its teaching of a combustor including a plurality of domes, its premixer, and both Horner et al. and Borkowicz et al. are cited for their teaching of steam injection into a premixer of a gas turbine combustor. Additionally, both Talabisco et al. and Maslak are cited merely for their injection of water or steam based on turbine load. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection of Claims 5, 12-14, and 18-20 be withdrawn.

Further, and to the extent understood, none of Borkowicz et al. or Schilling et al. in view of either Horner et al. or Borkowicz et al., and further in view of Talabisco et al. or Maslak, alone or in combination, describe nor suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 5 depends from Claim 1 which recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the step of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...."

None of Borkowicz et al., Schilling et al., Horner et al., Borkowicz et al., Talabisco et al., or Maslak, alone or in combination, describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes,

the water delivery system is connected to the gas turbine engine, and the method includes the step of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one. Rather, Schilling et al. describe a multiple annular combustion apparatus that does not include a water delivery system, and both Horner et al. and Borkowicz et al. describe combustors that include only a single dome and do not describe operating a combustor operable with a fuel/air mixture equivalence ratio less than one. Furthermore, both Talabisco et al. and Maslak describe systems in which water is injected based on load, and do not describe systems that include a combustor including a plurality of domes. For the reasons set forth above, Claim 1 is submitted to be patentable over Borkowicz et al. or Schilling et al. in view of either Horner et al. or Borkowicz et al., and further in view of Talabisco et al. or Maslak.

Claim 5 depends from independent Claim 1. When the recitations of Claim 5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 5 likewise is also patentable over Borkowicz et al. or Schilling et al. in view of either Horner et al. or Borkowicz et al., and further in view of Talabisco et al. or Maslak.

Claims 12 and 13 depend from Claim 6 which recites a combustor system for a gas turbine engine, wherein the combustor system comprises "a combustor comprising a plurality of domes, at least one of said combustor domes configured to operate with a fuel/air mixture equivalence ratio less than one...a water delivery sub-system connected to the gas turbine engine and configured to supply at least one of water and steam to the gas turbine such that at least one of water and steam is injected into the combustor."

None of Borkowicz et al., Schilling et al., Horner et al., Borkowicz et al., Talabisco et al., or Maslak, alone or in combination, describe nor suggest a combustor system for a gas turbine engine, wherein the combustor system includes a plurality of domes, wherein at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one, in combination with a water delivery sub-system connected to the gas turbine engine and

configured to supply at least one of water and steam to the gas turbine such that at least one of water and steam is injected into the combustor. Rather, Schilling et al. describe a multiple annular combustion apparatus that does not include a water delivery system, and both Horner et al. and Borkowicz et al. describe combustors that include only a single dome and do not describe operating a combustor operable with a fuel/air mixture equivalence ratio less than one. Furthermore, both Talabisco et al. and Maslak describe systems in which water is injected based on load, and do not describe systems that include a combustor including a plurality of domes. For the reasons set forth above, Claim 6 is submitted to be patentable over Borkowicz et al. or Schilling et al. in view of either Horner et al. or Borkowicz et al., and further in view of Talabisco et al. or Maslak.

Claims 12 and 13 depend, directly or indirectly, from independent Claim 6. When the recitations of Claims 12 and 13 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claims 12 and 13 likewise are patentable over Borkowicz et al. or Schilling et al. in view of either Horner et al. or Borkowicz et al., and further in view of Talabisco et al. or Maslak.

Claims 18-20 depend from Claim 14 which recites a gas turbine engine comprising a combustor system comprising a combustor and a water delivery sub-system...said combustor being a lean premix combustor comprising a plurality of domes...at least one of said domes configured to operate with a fuel/air mixture equivalence ratio less than one... said water delivery sub-system configured to supply at least one of water and steam to the gas turbine engine such that at least one of water and steam is injected into the combustor."

None of Borkowicz et al., Schilling et al., Horner et al., Borkowicz et al., Talabisco et al., or Maslak, alone or in combination, describe nor suggest a gas turbine engine including a combustor system including a combustor that includes a combustor and a water delivery sub-system, wherein the combustor includes a plurality of domes such that at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one, and wherein the

water delivery sub-system is configured to supply at least one of water and steam to the gas turbine engine such that at least one of water and steam is injected into the combustor. Rather, Schilling et al. describe a multiple annular combustion apparatus that does not include a water delivery system, and both Horner et al. and Borkowicz et al. describe combustors that include only a single dome and do not describe operating a combustor operable with a fuel/air mixture equivalence ratio less than one. Furthermore, both Talabisco et al. and Maslak describe systems in which water is injected based on load, and do not describe systems that include a combustor including a plurality of domes. For the reasons set forth above, Claim 14 is submitted to be patentable over Borkowicz et al. or Schilling et al. in view of either Horner et al. or Borkowicz et al., and further in view of Talabisco et al. or Maslak.

Claims 18-20 depend, directly or indirectly, from independent Claim 14. When the recitations of Claims 18-20 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 18-20 likewise are patentable over Borkowicz et al. or Schilling et al. in view of either Horner et al. or Borkowicz et al., and further in view of Talabisco et al. or Maslak.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 5, 12-14, and 18-20 be withdrawn.

The rejection of Claims 4 and 9 under 35 U.S.C. § 103 as being unpatentable over Schlep, Johnson, Hilburn, or Horner et al., and further in view of Belcher, Joshi, and Borkowicz et al.

Schlep, Johnson, Hilburn, Horner et al., Joshi, and Borkowicz are described above. Belcher describes a gas turbine engine 10 including a liquid fuel manifold 26 and a steam manifold 38.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it

would have been an obvious to one of ordinary skill in the art to modify Schlep, Johnson, Hilburn, or Horner et al. according to the teachings of either Belcher, Joshi, and Borkowicz et al. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Schlep, Johnson, Hilburn, Horner et al., Belcher, Joshi, or Borkowicz describe nor suggest the claimed combination. Rather, the present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection of Claims 4 and 9 be withdrawn.

Further, and to the extent understood, none of None of Schlep, Johnson, Hilburn, Horner et al., Belcher, Joshi, or Borkowicz, alone or in combination, describe nor suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 4 depends from Claim 1 which recites a method for operating a gas turbine combustor using a water delivery system, the combustor including a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method comprising the step of "operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one...."

None of Schlep, Johnson, Hilburn, Horner et al., Belcher, Joshi, or Borkowicz t al., alone or in combination, describe nor suggest a method for operating a gas turbine combustor using a water delivery system, wherein the combustor includes a plurality of domes, the water delivery system is connected to the gas turbine engine, and the method includes the step of operating the gas turbine engine with a combustor including a plurality of domes and with a combustor fuel/air mixture equivalence ratio less than one. Rather, Schlep, Johnson, Borkowicz, and Horner et al. describe operating a gas turbine engine including a single dome combustor, Hilburn describes a

diffusion flow pilot assembly that includes a plurality of nozzles that direct fuel into a single dome combustor, and both Belcher and Joshi describe engines that receive dual fuel injection. For the reasons set forth above, Claim 1 is submitted to be patentable over Schlep, Johnson, Hilburn, or Horner et al., and further in view of Belcher, Joshi, and Borkowicz et al.

Claim 4 depends from independent Claim 1. When the recitations of Claim 4 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 4 likewise is also patentable over Schlep, Johnson, Hilburn, or Horner et al., and further in view of Belcher, Joshi, and Borkowicz et al.

Claim 9 depends from Claim 6 which recites a combustor system for a gas turbine engine, wherein the combustor system comprises "a combustor comprising a plurality of domes, at least one of said combustor domes configured to operate with a fuel/air mixture equivalence ratio less than one...a water delivery sub-system connected to the gas turbine engine and configured to supply at least one of water and steam to the gas turbine such that at least one of water and steam is injected into the combustor."

None of Schlep, Johnson, Hilburn, Horner et al., Belcher, Joshi, or Borkowicz t al., alone or in combination, describe nor suggest a combustor system for a gas turbine engine, wherein the combustor system includes a plurality of domes, wherein at least one of the domes is configured to operate with a fuel/air mixture equivalence ratio less than one, in combination with a water delivery sub-system connected to the gas turbine engine and configured to supply at least one of water and steam to the gas turbine such that at least one of water and steam is injected into the combustor. Rather, Schlep, Johnson, Borkowicz, and Horner et al. describe operating a gas turbine engine including a single dome combustor, Hilburn describes a diffusion flow pilot assembly that includes a plurality of nozzles that direct fuel into a single dome combustor, and both Belcher and Joshi describe engines that receive dual fuel injection. For the reasons set forth above, Claim 1 is submitted to be patentable over Schlep, Johnson, Hilburn, or Horner et al., and further in view of Belcher, Joshi, and Borkowicz et al.

Claim 9 depends from independent Claim 6. When the recitations of Claim 9 are considered in combination with the recitations of Claim 6, Applicants submit that dependent Claim 4 likewise is also patentable over Schlep, Johnson, Hilburn, or Horner et al., and further in view of Belcher, Joshi, and Borkowicz et al.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

This paper is filed by the undersigned, who is not presently an attorney of record, pursuant to 37 C.F.R. 1.34(a), MPEP 405, at the instruction of the attorney of record.

Respectfully Submitted,

Robert B. Reeser III
Registration No. 45,548
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Hook et al.

Serial No.: 09/545,554

Filed: April 7, 2000

For: METHODS AND APPARATUS FOR REDUCING GAS TURBINE ENGINE EMISSIONS

Art Unit: 3746

Examiner: T. Kim

CERTIFICATE OF MAILING

I certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on Apr 23, 2001

Robert A. Reeser III
Reg. No. 45,548

SUBMISSION OF MARKED UP CLAIMS

Hon. Assistant Commissioner for Patents
Washington, D.C. 20231

Submitted herewith are marked up Claims in accordance with 37 C.F.R. 1.121(c)(1)(ii).

IN THE CLAIMS

Please cancel claim 7.

1. (once amended) A method for [reducing an amount of emissions from] operating a gas turbine combustor of a gas turbine engine using a water delivery system, [the gas turbine engine including a lean premix type of combustor operable with a fuel/air mixture equivalence ratio less than one,] the combustor including a plurality of domes, the water delivery system connected to the gas turbine engine, said method comprising the steps of:

[operating the gas turbine engine with a] supplying at least one combustor dome fuel/air mixture equivalence ratio less than one; and

supplying at least one of water and steam into the gas turbine engine with the water delivery system such that at least one of water and steam is injected into the combustor.

2. (once amended) A method in accordance with Claim 1 wherein [the combustor includes a plurality of domes,] said step of supplying at least one of water and steam further comprising the step of supplying at least one of water and steam to at least one of the plurality of domes.

6. (once amended) A combustor system for a gas turbine engine [having a rated engine power capability], said combustor system comprising:

a [lean premix type of] combustor comprising a plurality of domes, at least one of said combustor domes configured to operate with a fuel/air mixture equivalence ratio less than one; and

a water delivery sub-system connected to the gas turbine engine and configured to supply at least one of water and steam to the gas turbine such that at least one of water and steam is injected into the combustor.

13. (once amended) A combustor system in accordance with Claim 12 wherein the engine has a rated engine power, said water delivery sub-system is further configured to supply water in the first operating mode when the gas turbine engine operates below a predefined percentage of the rated engine power and supply water in the second operating mode when the gas turbine engine operates above the predefined percentage of the rated engine power.

14. (once amended) A gas turbine engine comprising a combustor system [configured to reduce emissions from said gas turbine engine, said combustor system]comprising a combustor and a water delivery sub-system, said combustor [is] being a lean premix combustor

comprising a plurality of domes, at least one of said domes configured to operate with a fuel/air mixture equivalence ratio less than one, said water delivery sub-system [connected to said gas turbine engine and] configured to supply at least one of water and steam to the gas turbine engine such that at least one of water and steam is injected into the combustor.

16. (once amended) A gas turbine engine in accordance with Claim 14 wherein said combustor comprises a plurality of domes, said water delivery sub-system further configured to supply at least one of water and steam to at least one dome of said combustor.

This paper is filed by the undersigned, who is not presently an attorney of record, pursuant to 37 C.F.R. 1.34(a), MPEP 405, at the instruction of the attorney of record.

Respectfully Submitted,

Robert B. Reeser III
Registration No. 45,548
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070